

Brighton Aquarium

I ADDRESSED a letter some weeks ago to the chairman of the Brighton Aquarium Company, in which, amongst other matters, I suggested that a stand with a few microscopes exhibited therein, which had been offered by a London maker, would be a source of great additional attraction, without being any expense to the company.

I also suggested that it might very likely be the nucleus of a school of marine zoology, if for a separate subscription the directors could set aside a room to be used by students, who might form themselves into a kind of club, and work with their microscopes and tanks in quiet. The nearness to London of the Brighton Aquarium might, I remarked, prove the inducement to many non-residents to join; whilst a library, and a few demonstrations, would give increased means of gaining information.

I think, sir, that the importance of my suggestions warrants my requesting you to make them public, since other aquaria might also take the matter up, without damage to the Brighton Company, in the success of which I take the warmest interest.

MARSHALL HALL

New University Club, March 7

General Travelling Notes

I BELIEVE F. G. S. P. would find some of the information he wishes, in a small pamphlet which is to be obtained at the Royal Geographical Society, 1, Savile Row, price 1s. There is also an excellent little work (very portable) which has been recently published by some Fellows of the Anthropological Institute for the use of travellers, which would be found useful; price 1s.

J. RAE

New Guinea

THE *Academy* for July 15, 1872, contains a note on New Guinea, from *Petermann's Mittheilungen* in which there are two slight mistakes. Perhaps you will allow me to correct them in your journal.

It is said, "The London Missionary Society founded a number of stations on the south-eastern peninsula" in 1871, and that these stations were "in charge of educated natives of the Tongan Archipelago."

The stations founded by the agents of the London Missionary Society in 1871 were not on the large island of New Guinea, but on the small islands of Erub, Tauan, and Saibai in Torres Straits. The Society's vessel has, however, sailed this year with a staff of English and Polynesian missionaries on board, who hope to be able to occupy stations on New Guinea itself.

The "educated natives" placed as pioneers in the first settlements are not "natives of the Tongan Archipelago," but of the Loyalty Islands near to New Caledonia, and they belong to the black Polynesian, or Papuan race. The Tongan Islands are entirely under the care of the Wesleyan Missionary Society.

The missionaries who touched at New Guinea in 1871 believe they saw people similar to the brown Polynesians as well as the black frizzly haired Papuans proper. Hence, evangelists from both races of Polynesians have been sent to New Guinea this year.

S. J. WHITMEE

Samoa, Nov. 6, 1872

Flight of Projectiles

YOUR correspondent, "Robert Reid," asks for an impossibility. There is no impossibility in calculating the theoretical deflection in the flight of a bullet due to a theoretical wind pressure, but the formula could not be "simple." However, Mr. Reid need not be distressed, for it is difficult to conceive any intellectual occupation which would be a more complete waste of ingenuity. Let us consider the real conditions of the problem.

Mr. Reid has not stated them with completeness. It is not sufficient to know the time of flight of the bullet, its size, and weight, the theoretical pressure of the wind, and the angle at which that pressure is exerted. It would be necessary, also, to know the angle at which the rifle is fired, the initial velocity of the bullet, and the space travelled over in its flight. It is obvious at once that the vertical line of flight, if I may be permitted the expression, is not a straight line, but a curve, rapidly accelerating towards the end. If we assume certain arbitrary theoretical figures for initial velocity and strength of wind, there would be no great difficulty in calculating the curve, but it would

be a purely imaginary curve, and an utterly useless and deluding calculation. Let us consider the disturbing elements. First, the powder. It would be difficult, if not impossible, to get two charges of precisely and absolutely the same strength. Then the state of foulness would vary. Then the pressure of the wind would always vary in a distance of 500, or 1,000, or 1,500 yards, and in a flight of several seconds; even its very direction would vary at different points in the line of flight, unless in the case of a perfectly open exposed plain.

To all soldiers tempted to indulge in calculations of this nature I would venture to say that there is nothing so likely to mislead. Science and practice should be one and the same thing. If what professes to be science cannot be carried out in practice, it is not true science but bastard science, or pedantry, and the unpractical pedant is even more mischievous in war than the so-called "practical man" in matters of civil life.

Army and Navy Club, March 10

W. HOPE

Glacial Action

IN NATURE of vol. vii. p. 241, you say, "Dr. Dawson thinks that the fiords on coasts, like the deep lateral valleys of mountains, are evidences of the action of waves, rather than that of ice. No glacialist, as far as we know, holds the extravagant belief that fiords have been cut out by ice. They are undoubtedly submerged valleys, and were hollowed out by streams and other atmospheric influences in ages long anterior to the glacial epoch."

A true fiord, like those of Norway, Scotland, and, we may add, the west of Ireland, is nothing but a mountain valley sufficiently depressed for the sea to enter it. I am not a practical geologist, but I have read what appeared to be strong arguments in favour of the belief that the valleys of the Alps have been hollowed out by glaciers. I do not see how any one who sees the quantity of mud that glacier streams bring down, can doubt the great power of glaciers as excavating agents; and the argument is strengthened by the vast moraines, thousands of feet below the present lower limit of the glaciers, and now overgrown with trees, which are to be observed throughout the Alps.

If mountain valleys have not been, in at least a great proportion of cases, excavated by glaciers, how are we to account for the fact that fiords and mountain lakes are almost, if not quite, confined to the higher latitudes? This is especially observable on the west coast of America, which is remarkably unbroken from Vancouver's Island to Chiloe, but broken into fiords from Vancouver's Island northward, and from Chiloe southward.

This observation throws no light on the very different question of the origin of great lowland lakes like those of North America and Africa.

JOSEPH JOHN MURPHY

Old Forge, Dunmurry, Co. Antrim

The Feeding Habits of the Belted Kingfisher

ON page 48 of Mr. Darwin's "Expression of the Emotions," I find the assertion, "Kingfishers when they catch a fish always beat it until it is killed." We have, in New Jersey, one species of kingfisher, the *Ceryle alcyon*, which is exceedingly abundant for about seven months of the year. For several years I have observed them carefully, both feeding and breeding about the banks of Crossweaksen Creek, and I feel certain that I am correct in saying that I have never seen a kingfisher take its food otherwise than by swallowing it whole, while yet upon the wing. The fish having been swallowed, or at least, having disappeared, the kingfisher will then alight upon the branch of a tree, and will then, frequently, stretch out its neck, and go through a "gulping motion," as though the fish was not entirely in the bird's stomach, or perhaps was only in the oesophagus. In the thousands of instances that I have witnessed, of these birds catching small fish, I never once saw a fish taken from the water, and killed, before being devoured.

So far as my recollection serves me, in the large majority of instances, the kingfisher, after darting into the water and securing a small cyprinoid, will emerge from the stream, uttering its shrill cacophonous scream, as if rejoicing over the delicate morsel it had captured and not scolding at its ill-success, as has been thought; for we have frequently shot them as they rose from the water, and invariably found a fish, still alive, in the stomach or oesophagus. Indeed, I cannot see how this characteristic cry of the kingfisher could be accomplished with a fish struggling in its beak. When the fish, from its size or other cause, is retained in the oesophagus until the bird alights, the movements of the bird, to effect the swallowing, are very

similar to those of a pigeon while feeding her young. The neck shortens and swells; the feathers are ruffled and the wings slightly open and shut, two or three times.

So far as my observations of the *Ceryle alcyon* extend, Mr. Darwin's remarks will not apply to that kingfisher.

CHAS. C. ABBOTT

Trenton, New Jersey, Jan. 14

A PETRIFIED FOREST IN THE LIBYAN DESERT

ON the western horizon of the Libyan Desert, as viewed from the summit of the Great Pyramid of Ghizeh, a conical hill stands in solitary grandeur, far removed from the route of desert travellers. This has long been supposed to be the ruins of a pyramid, yet nowhere is it recorded to have been visited by any but the Bedouin tribes who pass within a few miles of it, on the old caravan route to the Faïoom. It is enumerated by Lepsius as one of the Pyramids of Egypt, and in a recent work on the Great Pyramid* it is called Dr. Leider's Pyramid, "until a better name be found for it," merely from its having been pointed out to the author by the late Dr. Leider of Cairo, who, however, had never visited it.

The following narrative of a visit to the eminence by Mr. Waynman Dixon, engineer, and Dr. Grant of Cairo, and of their discovery of a very remarkable petrified forest near its base, whose gigantic trees lie scattered about the desert in profusion, has been communicated to us by the former gentleman:—

Leaving the pyramids behind and lighted by the clear silvery moonlight, we set out into the desert by the caravan route to the Faïoom, leading up a solitary valley, in the rocks of which are cut ancient Egyptian tanks and mummy-pits. Presently we turn off from the regular track and take our way into the unfrequented desert, steering straight westward for the distant pyramidal hill. The sand of the desert is here hard and compact, and travelling easy, indeed, with the exception of one or two places where the sand is soft and heavy, a wheeled carriage might drive all the way, and to most travellers would be much preferable to camel or even donkey riding.

After many hours hard riding, we at last reach the top of a slight eminence, and across the wide valley in front of us is the place of our destination.

These long valleys, or "wadys," have much of interest about them; throughout may be seen the dry water-courses where the rare rain-showers carry down the sand into the bed, and leave all the little hills and eminences covered with flints as big as potatoes and with surfaces so brightly polished as to give the desert a silvery look by moonlight, or by day to cause the appearance of rippled water where they reflect the sunlight. The zoology and botany, too, of the desert are very interesting. There are numbers of the little "jerboa," a species of rat, with long hind legs and long tail with a tuft of hair at its end, which hops about like a kangaroo. Now and then may be seen a gazelle or two scampering off at the unusual sight of a caravan. A few small birds get a precarious existence, and in the sky an eagle or vulture sometimes wings its way. The insects are few, and the herbage is extremely scant, and it is a marvel what the animals live on. There are here and there in the water-courses small tufts of camel-thorn—a little shrub not unlike a whin, another with a coral-like growth, and now and then a handful of a tough wiry sort of grass, but what these again subsist on it is hard to say, for there is not a shower more than once or twice a year, and for nine months there is no dew while the heat of the sand at midday in summer is over 100 degrees.

Arrived at our destination before daybreak, we dis-

* "Life and Work at the Great Pyramid," by Prof. Piazzesi Smyth, F.R.S.

mount from our camels, and while the Bedouins are unloading the baggage, we hasten as fast as our legs, stiff with camel riding, will permit, up the heaps of sand and flints to the summit of the so-called Pyramid, to find on attaining it that it is but the conical end of a prism-shaped hill, stretching westward, and standing boldly out of the desert plain.

Near the top the rock crops out, and appears to be a species of friable sandstone fretted by the weather into curious shapes; but the actual summit is covered with flints and sand, and, what strikes one as being very strange, many fragments of petrified wood.

Taking a general survey from this quoin of vantage, we choose the best spot to the north of the hill to pitch our camp, exposed to the slight north wind which blows incessantly here, and descending its steep sides, at the bottom are surprised to find near the chosen spot three large stone trees lying prostrate on the sand. The largest is 51 ft. in length and 3 ft. 6 in. in diameter at its widest end, and 2 ft. at its smallest; they are branching exogenous trees, apparently a species of pine, and the one before us has the fork of a large branch very complete.

Wandering on up the wady to the north of the hill, named by us "Kôm el Khashob"—the hill of wood—we find the whole desert littered with fragments of petrified wood, from twigs the size of one's finger to pieces of large branches or trunks of trees; and on the flank of the hill to the north are hundreds of immense trees, lying half buried in the sand, some 70 ft. long, and in many instances with part of the bark still attached. All of them are exogenous trees—no single instance of a palm could we discover—and from the absence of roots it may be presumed have been drifted here by the sea. The stratum is apparently sandstone, overlying the limestone of the Nile valley; there are also here and there patches of a dark chocolate-coloured friable mineral with specks of green which looked like copper, but proved on subsequent analysis to be carbonate of iron; beds of what the Arabs call "Gyps" or gypsum, and nodules of an intensely hard black granulated looking stone—not unlike emery stone. The whole geological character suggesting the—possibly delusive—suspicion of the existence of coal under the surface.

Having carefully surveyed this neighbourhood we again climbed the "Kôm el Khashob," taking instruments to measure its height and determine its position; the former of which we found to be 752 ft. above the Nile level at Cairo, 602 ft. above the north-east socket of the Great Pyramid, and consequently about 140 ft. higher than its summit.

Having secured one or two sketches of the hill, and the sun being now near setting, we "fold up our tents like the Arabs and silently steal away." Mounting our camels again, and taking a slightly different route on our return, we pass some ancient solitary well-tombs away in the desert, but without mark or hieroglyphic inscription on them. All the way we notice fragments of petrified wood, and near to the pyramids extensive beds of oyster shells. This forest may almost be said to be a continuation—doubtless going much farther westward than we penetrated—of the well-known petrified forest in the Abassiëh Desert to the east of Cairo, which extends a long way in the direction of Suez, but is inferior both in extent and in the size and perfectness of the trees to that of the newly-discovered forest. The formation of the land here would lead to the supposition that it has been the ancient coast line, and that the trees drifted to where they are now found, and were then left in the briny waters of an evaporating sea or salt lake; and as the fibre of the wood decayed slowly away, the space of each cell has been filled up by the crystallising silica held in solution in the water.

Since the discovery of this forest it has been visited by many Europeans in Cairo, and English travellers, and to geologists especially it is well worthy of a visit. It may easily be reached from the Great Pyramid